

Guadino discloses AOTFs cascaded together in a node architecture for adding/dropping wavelengths of a wavelength division multiplexed (WDM) light.

However, as recognized by the Examiner in the Office Action, Gaudino fails to specifically teach that the phase of a beat generated by the RF signals applied to the first optical filter is different than a phase of a beat generated by the RF signals applied to the second optical filter.

Therefore, the Examiner combines Gaudino with Thompson to reject the claimed invention.

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Thompson relates to the use of acoustooptic devices *in a laser or other optical resonator to produce wavelength-dependent deflection*. See, for example, the Abstract; FIG. 1, and column 5, line 61, through column 6, line 38, of Thompson. It is respectfully submitted that the use of an acoustooptic device in a laser or other optical resonator to produce wavelength-dependent deflection is significantly different than, and non-analogous to, the use of AOTFs in a node architecture for adding/dropping wavelengths of a wavelength division multiplexed (WDM) light.

For example, Thompson relates to *deflecting* a light to tune a laser cavity, whereas Gaudino relates to *filtering* a WDM light to thereby switch different wavelengths of the WDM light to different output ports. Moreover, the light in Thompson is laser light, whereas the light in Gaudino is WDM light.

Therefore, it is respectfully submitted that Gaudino and Thompson are non-analogous art.

The above arguments relating to Gaudino and Thompson being non-analogous art were presented in the prior response. However, on page 10 of the outstanding Office Action, the Examiner asserts that "since Guadino teaches cascading acousto-optic devices and Thompson teaches methods of controlling acousto-optical devices, it is clear that both references are related to the same field of endeavor".

However, as indicated above, Guadino discloses AOTFs cascaded together in a node architecture for adding/dropping wavelengths of a WDM light. Thompson, which is a U.S. Patent, is classified by the USPTO in classification 372, Coherent Light Generators. As an example, different types of lasers would be coherent light generators. Coherent Light Generators (e.g., lasers) as in Thompson are significantly different than node architectures for adding/dropping wavelengths of a WDM light as described above for

Gaudino.

Further, on page 10 of the Office Action, the Examiner broadly describes Gaudino as teaching "cascading acousto-optic devices" and Thompson as teaching "methods of controlling acousto-optical devices". It is respectfully submitted that such broad descriptions ignore the particular fields in which the inventions are intended. More specifically, as indicated above, Gaudino is directed to the particular field of a node architecture for adding/dropping wavelengths of a WDM light. By contrast, as indicated above, Thompson is directed to the particular field coherent light generators (e.g., lasers) and to the more particular field of tuning a laser cavity.

In addition, as indicated above, Thompson relates to *deflecting* a light to tune a laser cavity, whereas Gaudino relates to *filtering* a WDM light to thereby switch different wavelengths of the WDM light to different output ports. Moreover, as indicated above, the light in Thompson is laser light, whereas the light in Gaudino is WDM light.

For these reasons, it is respectfully submitted that the Examiner has too broadly described fields of endeavor of Gaudino and Thompson on page 10 of the Office Action.

In view of the above, it is respectfully strongly reasserted that Gaudino and Thompson are non-analogous art.

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Moreover, the Examiner asserts that column 6, lines 2-13, of Thompson, teach that it is well known in the art to configure cascaded AOTFs so that a phase of a beat generated by the RF signals applied to the first AOTF are different than a phase of a beat generated by the RF signals applied to the second AOTF. However, it is respectfully submitted that column 6, lines 2-13 of Thompson, cited by the Examiner, relate to an acoustooptic deflector (AOD). For example, this portion of Thompson specifically indicates that it refers to an "AOD". As indicated on column 1, lines 43-58, of Thompson, an AOD is a specific type of acoustooptic device used to vary the deflection angle of a beam. By contrast, Gaudino relates to AOTFs, which are different devices from AODs. See, for example, column 1, line 43 through column 2, line 4, of Thompson, discussing differences between AODs and AOTFs. Therefore, it is respectfully submitted that the cited portion of Thompson should not be combined with Gaudino in the manner suggested by the Examiner.

Although this argument was presented in the prior response, it is respectfully submitted that the Examiner has not specifically addressed this argument in the outstanding Office Action.

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Claims 2, 5, 37 and 41 relate to the differences in phase of beats as being equal to a value obtained by dividing 180° by the number of stages. The Examiner asserts that such a difference in phase of beats would be obvious over Gaudino in view of Thompson. However, it is respectfully submitted that neither reference relates to, or suggests, any type of relationship between the phase of the beats, the numbers of stages, and 180° . Moreover, it is respectfully submitted that neither reference indicates why such a relationship would be necessary. Therefore, it is respectfully submitted that claims 2, 5, 37 and 41 are patentable over the combination of Gaudino and Thompson.

On page 9, lines 7-10, of the outstanding Office Action, the Examiner asserts that "It is clear that one skilled in the art could have selected a phase of the signal input to the acousto-optic devices that would have resulted in a difference in the phase of the beats being equal to a value obtained by division 180 by the number of stages." However, the Examiner has not indicated any portion of either reference which discloses or suggests any type of relationship between the phase of the beats, the number of stages and 180° , or provided any indication why a person of ordinary skill in the art would have made such a determination. For example, why does the Examiner believe that the use of " 180° " would be clear to a person of ordinary skill in the art? Why not 45° or 100° ?

Therefore, it is respectfully submitted that claims 2, 5, 37 and 41 are patentable over the combination of Gaudino and Thompson.

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Claims 10 and 53 relate to first, second and third optical filters arranged in a specific manner. Similarly, claims 18, 62 and 64 relate to first, second and third AOTFs arranged in a specific manner. The Examiner asserts that such arrangements would be obvious over Gaudino in view of Thompson. The Examiner specifically refers to the second paragraph on page 79 of Gaudino as suggesting that greater than two AOTFs can be cascaded. However, from a review of Gaudino, it is respectfully submitted that no portion of page 79, or any other portion of Gaudino, suggests that more than two AOTFs can be cascaded. For example, each configuration in Gaudino, such as those in FIGS. 1 and 5 of Gaudino, disclose the use of only two AOTFs. Regardless, it is respectfully submitted that neither references discloses or suggests the specific phases of the beats as recited in the claims.

On page 9 of the outstanding Office Action, the Examiner asserts that "Gaudino's

experiment clearly showed that a signal could be recirculated repeatedly through the add/drop node at least 7 times before reaching the error threshold $Q > 6$, thereby clearly suggesting that up to 7 of Gaudino's AOTFs could be cascaded before a signal input to those AOTFs reached the error threshold of $Q > 6$." However, this disclosure in Gaudino is intended simply to show the cumulative error effect of a signal repeatedly passing through the two-AOTF configuration of Gaudino. For example, this disclosure shows the cumulative error effect when a signal passes through the two-AOTF configuration of Gaudino up to 7 times. In no way does this disclosure in Gaudino suggest that the two-AOTF configuration could be expanded to include more AOTFs.

It should be emphasized that no portion of Gaudino discloses or suggests how the two-AOTF configuration of Gaudino would be modified to accompany additional AOTFs.

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In the first paragraph on page 9 of the outstanding Office Action, the Examiner asserts that "one skilled in the art would have been able to change the phase of the RF signals, as taught by Thompson, input to the acousto-optic devices taught by Gaudino. As such it is clear that through routine experimentation, one skilled in the art would have found settings for the phases of the RF signals input to the acousto-optic devices which yielded favorable results in the form of the beats generated by the input RF signals. Therefore, it is clear that one skilled in the art would have had the option of choosing the phase of the signals input to the acousto-optic devices, and thereby the phase of the beats produced by the input RF signals".

In response, it should be noted that, as indicated, for example, on page 5, lines 6-16, of the specification, with the conventional use of an AOTF, the output can have the undesirable effect of varying with time. Also, as indicated on page 5, lines 6-16, of the specification, various embodiments of the present invention are directed, for example, to providing stable output characteristics so that the output does not significantly vary with time.

The Examiner has not shown any reference which describes the problem of varying output over time with a conventional AOTF, and has not disclosed any reference suggesting that changing the phase of the beats of a multiple-AOTF configuration can provide stable output characteristics over time.

Therefore, it is respectfully submitted that the Examiner incorrectly asserts that,

through routine experimentation, one skilled in the art would have found settings for the phases of the RF signals input to the acousto-optic devices which yielded favorable results in the form of the beats generated by the input RF signals.

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The above arguments are helpful in understanding differences in the various other rejected claims over the combination of Guadino and Thompson.

In view of the above, it is respectfully submitted that the rejection is overcome.

**III. REJECTION OF CLAIMS 16, 17, 23, 24, 33, 34, 60, 61, 69 AND 70
UNDER 35 USC 103 AS BEING UNPATENTABLE OVER GAUDINO IN VIEW OF
THOMPSON AND CHEUNG, U.S. PATENT NO. 4,906,064**

The arguments in Section II, above, for distinguishing over Guadino and Thompson, also apply here.

Rejected claims 16, 17, 23, 24, 33, 34, 60, 61, 69 and 70 relate to first, second and third optical filters or AOTFs being formed on a single substrate. The claims recite specific arrangements on the substrate.

Cheung discloses a complex switching system which comprises a plurality of 2X2 switching elements and the use of an AOTF as a mode toggle control element. See, for example, FIG. 1; column 2, lines 52-55; and column 3, line 8, through column 4, line 5, of Cheung.

However, no portion of Cheung discloses or suggests that all the elements are formed on a single substrate.

Therefore, none of the references, taken individually or in combination, disclose or suggest first, second and third optical filters or AOTFs as being formed on a single substrate in a specific arrangement as recited in the rejected claims.

In view of the above, it is respectfully submitted that the rejection is overcome.

IV. CONCLUSION

In view of the above, it is respectfully submitted that the application is in condition for allowance, and a Notice of Allowance is earnestly solicited.

If any further fees are required in connection with the filing of this response, please charge such fees to our Deposit Account No. 19-3935.

Respectfully submitted,

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